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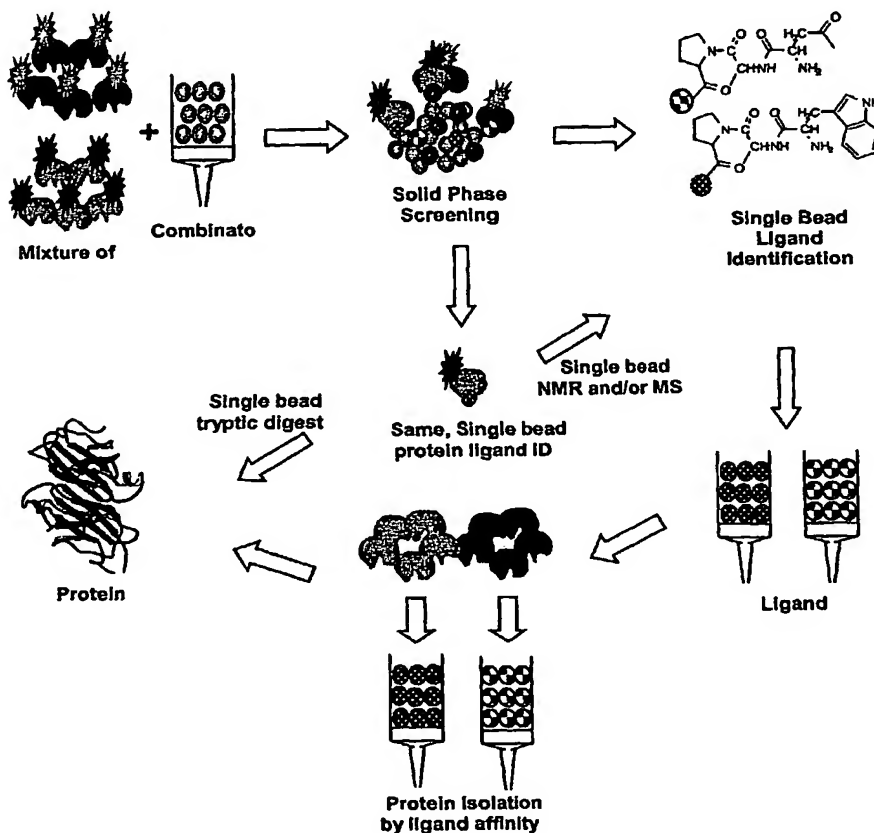
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GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
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TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

[Continued on next page]

(54) Title: AFFINITY SCREENING USING "ONE-BEAD-ONE-COMPOUND" LIBRARIES



(57) Abstract: The invention provides putative "drugable" protein targets and actively binding ligands identified in an efficient and reproducible process by determining the affinity of protein mixtures to libraries of ligand compounds of defined size and composition. The libraries are used to isolate and identify previously unknown corresponding protein-ligand binding pairs from a mixture of proteins and a library of compounds, and are particularly useful to identify differentially selective protein-ligand binding pairs, for example, representing a single physiological state or several varied but related states, such as disease versus normal conditions. The invention also provides processes for identifying such protein-ligand binding pairs.



(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT,

LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
- of inventorship (Rule 4.17(iv)) for US only

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/DK2004/000023

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G01N33/68 G01N33/58 C07K5/00 C07K7/00 A61P9/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01N C40B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS, EMBASE, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>WO 00/63694 A (UNIV VIRGINIA ; HAYSTEAD TIMOTHY A J (US)) 26 October 2000 (2000-10-26) cited in the application page 5, line 8 - line 10 page 11, line 7 - line 19 page 18, line 6 - line 22 figure 2 claims 1,4,8,9</p> <p>----- -/-</p>	2,3,6-35

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/DK2004/000023

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	LAM, KIT S. ET AL: "The "One -Bead-One-Compound" Combinatorial Library Method" CHEMICAL REVIEWS, CODEN: CHREAY; ISSN: 0009-2665, vol. 97, no. 2, 1997, pages 411-448, XP002292328 WASHINGTON DC the whole document	2,3,6-35
A	----- WO 00/63701 A (UNIV LELAND STANFORD JUNIOR ; BROWN PATRICK (US); HAAB BRIAN (US)) 26 October 2000 (2000-10-26) the whole document	1-35
P,X	----- WO 03/060460 A (FURKA ARPAD) 24 July 2003 (2003-07-24) the whole document	2,3, 6-10, 13-28, 30-35
P,X	----- WO 03/062831 A (UNIV CALIFORNIA) 31 July 2003 (2003-07-31) page 5, line 11 - page 34, line 10 claims 12,15 -----	2,3, 6-10, 13-35

INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK2004/000023

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of Item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1 - 35

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-35

Process for identifying specific members of a previously unknown protein-ligand binding pair

2. claims: 36-37

Ligands according to formula I and the corresponding ligand-protein binding pairs.

3. claims: 38-41

Ligands according to formula II and the corresponding ligand-protein binding pairs.

4. claims: 42-43

Ligands HY1 and HY2 and the corresponding ligand-protein binding pairs.

5. claims: 44-47

Ligands according to formula IV and the corresponding ligand-protein binding pairs.

6. claims: 48-49

Ligands comprising or consisting of [SEQ ID NO: 8] and the corresponding ligand-protein binding pairs.

7. claims: 50-51

Ligands comprising or consisting of [SEQ ID NO: 14] and the corresponding ligand-protein binding pairs.

8. claims: 52-53

Ligands comprising or consisting of [SEQ ID NO: 11] and the corresponding ligand-protein binding pairs.

9. claims: 54-55

Ligands comprising or consisting of [SEQ ID NO: 65] and the corresponding ligand-protein binding pairs.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

10. claims: 56-57

Ligands comprising or consisting of [SEQ ID NO: 66] and the corresponding ligand-protein binding pairs.

11. claims: 58-59

Ligands comprising or consisting of [SEQ ID NO: 67] and the corresponding ligand-protein binding pairs.

12. claims: 60-61

Ligands comprising or consisting of [SEQ ID NO: 69] and the corresponding ligand-protein binding pairs.

13. claims: 62-63

Ligands comprising or consisting of [SEQ ID NO: 18] and the corresponding ligand-protein binding pairs.

14. claims: 64-65

Ligands comprising or consisting of [SEQ ID NO: 56] and the corresponding ligand-protein binding pairs.

15. claims: 66-67

Ligands comprising or consisting of [SEQ ID NO: 21] and the corresponding ligand-protein binding pairs.

16. claims: 68-69

Ligands comprising or consisting of [SEQ ID NO: 23] and the corresponding ligand-protein binding pairs.

17. claims: 70-71

Ligands comprising or consisting of [SEQ ID NO: 27] and the corresponding ligand-protein binding pairs.

18. claims: 72-73

Ligands comprising or consisting of [SEQ ID NO: 28] and the corresponding ligand-protein binding pairs.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

19. claims: 74-75

Ligands comprising or consisting of [SEQ ID NO: 32] and the corresponding ligand-protein binding pairs.

20. claims: 76-77

Ligands comprising or consisting of [SEQ ID NO: 35] and the corresponding ligand-protein binding pairs.

21. claims: 78-79

Ligands comprising or consisting of [SEQ ID NO: 63] and the corresponding ligand-protein binding pairs.

22. claims: 80-81

Ligands comprising or consisting of [SEQ ID NO: 44] and the corresponding ligand-protein binding pairs.

23. claims: 82-88

Use of proteins as drug targets in a method to identify one or more drugs for the treatment of a clinical condition.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/DK2004/000023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0063694	A	26-10-2000	AU 774776 B2 08-07-2004
			AU 4232200 A 02-11-2000
			CA 2369868 A1 26-10-2000
			EP 1169641 A1 09-01-2002
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			WO 0063701 A2 26-10-2000
WO 03060460	A	24-07-2003	WO 03060460 A2 24-07-2003
WO 03062831	A	31-07-2003	WO 03062831 A1 31-07-2003